نموذج ثانوية أزهرية 1

الأزهر الشريف
قطاع المعاهد الأزهرية
الإدارة المركزية للامتحانات
وشئون الطلاب والخريجين

عدد الصفحات (١٦) صفحة
وعلى الطالب مسئولية المراجعة
والتأكد من ذلك قبل تسليم الكراسة

الورقة الامتحانية

لامتحان الشهادة الثانوية الأزهرية - الدور: الثاني

عام ١٤٣٧/ ١٤٣٨هـ - ٢٠١٦/ ٢٠١٧م

المـــادة : الفيزياء "لغات" القسم : العلمي زمن الإجابة : ثلاث ساعات

المذهـــب ....

السؤال	الدرجة بالأرقام	اسم المصحح ثلاثيًا
الأول		
الثاني		
الثالث		
الرابع		
الخامس		
السادس		
السابع		
الثامن		
المجموع		

مجموع الدرجات (مكتوبًا بالحروف)
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....
....
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اســم المراجع العددي ثلاثيًا:
....

اســم المراجع الفني ثلاثيًا:
....

الرقم السرى

مجمع مطابع الأزهر الشريف

الرقم السرى

الأزهر الشريف – قطاع المعاهد الازهرية
الإدارة المركزية للامتحانات وشئون الطلاب والخريجين

عدد الصفحات (١٦) صفحة
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نموذج ثانوية أزهرية 1

اســم المعهــد: ....

اسم الطالب ولقبه: ....

المــادة: الفيزياء "لغات" المذهـــب: ....

التــاريخ: .... رقم الجلوس: ....

تنبيه على الطالب كتابة اسمه ولقبه كاملا و يحظر عليه كتابة أى علامة تدل عليه داخل ورقة الإجابة.

مجمع مطابع الأزهر الشريف

توقيع الملاحظين بالاسم : ١- .... ٢- ....

تعليمات هامة

عزيزي الطالب / عزيزتي الطالبة: -

- اقرأ السؤال بعناية، وفكر فيه جيدًا قبل البدء في إجابته.
- أجب عن جميع الأسئلة ولا تترك أي سؤال دون إجابة .
- عند إجابتك على الأسئلة المقالية ، أجب فيما لا يزيد عن المساحة المحددة لكل سؤال .

مثال :

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- عند إجابتك على أسئلة الاختيار من متعدد (إن وجدت) ظلل الدائرة ذات الرمز الدال على الإجابة الصحيحة تظليلًا كاملًا لكل سؤال .

مثال : الإجابة الصحيحة (د) مثلًا

أ	ب	جـ	د

- في حالة ما إذا أجبت إجابة خطأ ، ثم قمت بشطبها وأجبت إجابة صحيحة تحسب الإجابة صحيحة .
- فى حالة ما إذا أجبت إجابة صحيحة ، ثم قمت بشطبها وأجبت إجابة خطأ تحسب الإجابة خطأ.
- في حالة التظليل على أكثر من رمز ، تعتبر الإجابة خطأ.
- **ملحوظة : يفضل عدم تكرار الإجابة على الأسئلة.**
- عدد صفحات الكراسة (١٦) صفحة.
- تأكد من ترقيم الأسئلة تصاعديًا ، ومن عدد صفحات كراستك، فهى مسئوليتك .
- **ترسم العلاقات البيانية في ورقة الرسم البياني المخصصة لذلك.**
- زمن الامتحان (**ثلاث ساعات**).
- الدرجة الكلية للامتحان (٦٠) درجة لكل سؤال (١٢) درجة لكل جزئية درجة واحدة.
- عند احتياج الطالب للإجابة على أي فقرة وذلك عند حدوث أي سبب يقتضي ذلك؛ يستخدم المسودة بآخر الورقة الامتحانية مع كتابة رقم السؤال والفقرة بوضوح، بشرط ألا تكون الإجابة مكررة.

هذا الجزء

غير مخصص للإجابة

ورقة رسم بيانى

Question 1:

A) Correct The underline in the following statement :

1- <u>The resistivity</u> is directly proportional to the conductor length and inversely proportional to its cross sectional area .

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2- The electron microscope depends in its operation on <u>the particle nature of light</u> .

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3- In silicon crystal which is doped with pentavalent element atoms , at thermal equilibrium **<u>n=p</u>**.

....

4- when a capacitor is connected with an A.C source the potential difference between its plates will be in the same phase with <u>the electric current intensity</u>.

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B) Give reason for each of the following :

1- Housing construction is recommended away from high voltage towers .

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2- Step -up transformers are used at generating power stations .

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3- Pfund's series contains the longest wavelength in hydrogen atom spectrum .

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4- The average value of an alternating current passes through a conductor equals to zero .

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C) A coil of resistance 100Ω and its self - induction $\frac{7}{22}$ H .Calculate:

9-The value of current passes through the coil when it is connected to a direct power supply of emf 12v (negligible internal resistance).

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10-The coil inductive reactance when it is connected to an alternating power supply of frequency 50Hz.

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11-The total impedance of the circuit when the coil is connected to the alternating power supply .

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12-What is the capacitance of the capacitor connected in series with the coil and the alternating power supply , so the current in the circuit is as great as possible?

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Questions 2:

A) Write The scientific term in each of the following :

1- An electric circuit consists of a coil and a capacitor in which interchange of the energy in the inductive coil as magnetic field and in the capacitor as an electric field.

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2- The physical model which used in the study of particle properties of light.

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3- It is the electromotive force induced in a coil when the rate of the current passing through it equals unity.

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4- The product of $\frac{2\pi}{\lambda}$ by the path difference between two waves equal in the wave length.

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B) what is meant by each of the following :……..?

5- The mutual induction between two coils.

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6- The state of population inversion for an active medium atoms .

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7- Wien's law.

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8-Fleming's left hand rule .

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C) First : If the least dimension that can be detected with an electron microscope is 10n.m if you know that :
($e=1.6\times10^{-19}$ C, $m_e=9.1\times10^{-31}$ Kg, $h=6.625\times10^{-34}$ J.s).
Calculate:

9- The used electron beam velocity .

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10- The potential difference between the cathode and the anode .

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Second : A milliammeter of coil restance 100Ω and its scale reads up to 100 mA, calculate its total resistance after it is converted to :

11- A voltmeter of full scale 100V.

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12- An ammeter of full scale 10A .

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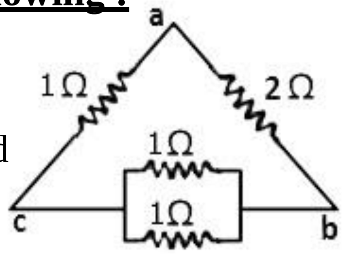
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Questions 3:

A) choose the correct answer for each of the following :

1- The shown resistances if connected to battery terminals the electric current intensity pass. through it will be largest possible when it connected to the terminals :



ⓐ c,b   ⓑ a,c   ⓒ a.b

2- X-rays line spectrum depends on :

ⓐ Target element

ⓑ The potential difference between the cathode and the anode

ⓒ The filament current intensity

3- The reactance of a capacitor unit is:

ⓐ Henry .   ⓑ Fared   ⓒ Ohm

4- In experiment to study mutual induction between two coils, an induce electromotive force generated in the secondary coil is in the same direction to that in the primary coil at the moment of :

ⓐ Increasing the primary coil current intensity

ⓑ Decreasing the primary coil current intensity

ⓒ Switching on the primary circuit.

B) mention two only from :

First : The physical phenomena that the classical physics hypotheses failed to explain .

5- ....

....

6- ....

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Second : The disadvantages of hot wire ammeter .

7- ....

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8- ....

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C)First : <u>you have a neon lamp works on potential difference 180V, an electromagnet of large number of turns , a battery of electromotive force less than that of lamp voltage and a key</u>

Drawing here

9- Illustrate by drawing only how to connect the above components to get instantaneous lighting of the lamp .

10- when does the lamp glow ? why?

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Second: <u>A transistor has β_e =24 ,calculate :</u>

11- α_e

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12- The collector current if the base current 24μA

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Questions4 :

A)Compare between each of following :

First :

Comparison	X-ray characteristic spectrum	Laser beam spectrum
The coherence of emitted photons	1-………………………..... ………………………….. …………………………..	2-………………………..... ………………………….. …………………………..

Second:

Comparison	Line spectrum	Continuous spectrum
The definition	3-………………………..... ………………………….. …………………………..	4-………………………..... ………………………….. …………………………..

B) First: What is the idea of the work of each of the following :

5- photo electric cell.

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6- Electric motor .

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Second : If a photon beam incident on a surface by rate (ϕ_L) and the change in its momentum is (2mc) due to its reflection from the surface.

7- Write the amount of the change in photon momentum in terms of its frequency.

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8-Find the force which the beam of photons affects the surface in terms of its frequency.

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C) An alternating current dynamo rotates in a magmatic field of flux density 0.4T . The following table shows the relation between the maximum induced electromotive force $(emf)_{max}$ and the angular velocity of the coil (ω).

$(emf)_{max}$ V	80	160	200	320	Y
ω rad/s	20	40	X	80	120

9- Draw the graphical relation between $(emf)_{max}$ on the Y-axis and (ω) on the X-axis (on the graph sheet)

10- From the graph find the value of both of (X)and (Y).

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11-From the graph find the area of armature .

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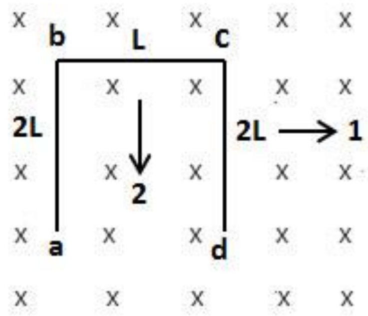
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12- Calculate the instantaneous induced electromotive force when $(emf)_{max}$ =200V and the plane of the coil makes an angle with the field equals 45°.

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Questions 5:



A)First :A metallic wire is in the shape of A three sides rectangle (abcd),has a length of (2L) and width of (L) moving with a velocity (v) in a uniform magnetic field of flux density (B) (perpendicular to the paper inwardly) such that the wire plane is perpendicularly to the field , as shown in the figure. What is the value of the induced emf between (a) and (d) when it moves (in the plane of paper):

1- To right side :(in direction1)..

2- Dawn ward :(in direction2)..

Second: In a transistor amplifier with a common emitter. How:

3- The emitter is connected with the base. ....

4- The emitter is connected with the collector . ...

B) What is the function of each of the following :

5- The platinum - iridium wire in the hot wire ammeter.

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6- The variable capacitor in the wireless radio receivers circuits.

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7- The pair of spiral springs in the moving coil galvanometer .

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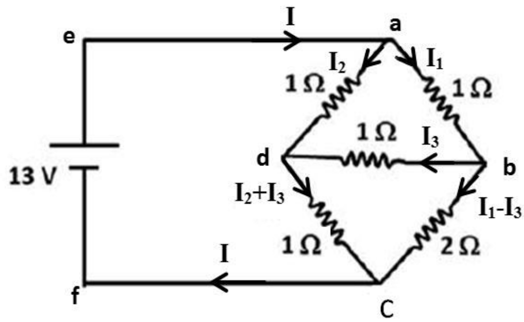
8- The two mirrors in helium - neon laser.

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C) <u>In the shown electric circuit , write the equations which verify Kirchhoff's laws.</u>



9- At the point (a) and in the closed loop (abda).

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10- In the closed loop (eabcfe) and in the closed loop (eadefe).

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11- Find the values of (I_1) , (I_2)from the previous equations .

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12-Calculate the total resistance of the circuit .

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